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Total Number of Pages in This Submission	67

Application Number	10/086,986
Filing Date	March 01, 2002
First Named Inventor	Gerard O'Driscoll
Art Unit	2676
Examiner Name	Caschera, Antonio A.
Attorney Docket Number	TD-166

ENCLOSURES *(Check all that apply)*

- [x] Fee Transmittal Form
- [x] Fee Attached
- [ ] Amendment/Reply
  - [ ] After Final
  - [ ] Affidavits/declaration(s)
- [ ] Extension of Time Request
- [ ] Express Abandonment Request
- [ ] Information Disclosure Statement
- [ ] Certified Copy of Priority Document(s)
- [ ] Reply to Missing Parts/ Incomplete Application
  - [ ] Reply to Missing Parts under 37 CFR 1.52 or 1.53
- [ ] Drawing(s)
- [ ] Licensing-related Papers
- [ ] Petition
- [ ] Petition to Convert to a Provisional Application
- [ ] Power of Attorney, Revocation Change of Correspondence Address
- [ ] Terminal Disclaimer
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- [ ] CD, Number of CD(s) _____
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- [ ] After Allowance Communication to TC
- [ ] Appeal Communication to Board of Appeals and Interferences
- [x] Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- [ ] Proprietary Information
- [ ] Status Letter
- [ ] Other Enclosure(s) (please Identify below):

Remarks

Submission of Appeal Brief with Claims Appendix, Evidence Appendix, Previously filed Notice of Appeal, Fee Transmittal Form, Return Post Cards, Check No. 1020 for $ 500.00 BD

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	Groover & Holmes Customer No. 29106		
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Printed name	Robert O. Groover		
Date	May 30, 2006	Reg. No.	30,059

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I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below:

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Typed or printed name	Barbara Downs	Date	May 30, 2006

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05-31-06

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Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).

FEE TRANSMITTAL For FY 2006

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT	($)	500.00

Complete if Known	
Application Number	10/086,986
Filing Date	March 01, 2002
First Named Inventor	Gerard O'Driscoll
Examiner Name	Caschera, Antonio A.
Art Unit	2676
Attorney Docket No.	TD-166

METHOD OF PAYMENT (check all that apply)

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☑ Deposit Account Deposit Account Number: 07-2320 Deposit Account Name: _____

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FEE CALCULATION (All the fees below are due upon filing or may be subject to a surcharge.)

1. BASIC FILING, SEARCH, AND EXAMINATION FEES

	FILING FEES		SEARCH FEES		EXAMINATION FEES		
		Small Entity		Small Entity		Small Entity	
Application Type	Fee ($)	Fee ($)	Fee ($)	Fee ($)	Fee ($)	Fee ($)	Fees Paid ($)
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	Fee ($)	Small Entity Fee ($)
Each claim over 20 (including Reissues)	50	25
Each independent claim over 3 (including Reissues)	200	100
Multiple dependent claims	360	180

Total Claims		Extra Claims	Fee ($)		Fee Paid ($)
_____	- 20 or HP =	_____	x _____	=	_____

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims		Extra Claims	Fee ($)		Fee Paid ($)
_____	- 3 or HP =	_____	x _____	=	_____

HP = highest number of independent claims paid for, if greater than 3.

Multiple Dependent Claims	
Fee ($)	Fee Paid ($)
_____	_____

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets		Extra Sheets		Number of each additional 50 or fraction thereof	Fee ($)		Fee Paid ($)
_____	- 100 =	_____	/ 50 =	_____ (round up to a whole number)	x _____	=	_____

4. OTHER FEE(S)

	Fees Paid ($)
Non-English Specification, $130 fee (no small entity discount)	
Other (e.g., late filing surcharge): Appeal Brief filing fee	500.00

SUBMITTED BY

Signature		Registration No. (Attorney/Agent) 30,059	Telephone 972-980-5840
Name (Print/Type)	Robert Groover		Date May 30, 2006

This collection of information is required by 37 CFR 1.136. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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OIPE IAP4
MAY 3 0 2006
PATENT & TRADEMARK OFFICE

In the United States Patent and Trademark Office

Applicant:	Gerard O'Driscoll
Application No.:	10/086,986
Filing Date:	March 1, 2002
Examiner:	Caschera, Antonio A.
Title:	High Quality Antialiased Lines with Dual Sampling Pattern
Art Unit:	2676
Docket No.:	TD-166

For:

APPEAL BRIEF

Honorable Commissioner of Patents and Trademarks
Alexandria, VA 22313

Sir:

Enclosed is an Appeal Brief with four Appendices (including a copy of the Notice of Appeal previously filed).

Any extension of time necessary for consideration of this appeal is also hereby requested. The correct amount of fee has been included. However, the Commissioner is authorized to charge any fees, or credit any overpayment, to Deposit Account Number 07-2320.

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Real Party in Interest

The real party in interest, and assignee of this case, is *3Dlabs Inc., Ltd.*, of Reid Hall, Hamilton HM11, Bermuda.

Related Appeals and Interferences

To the best knowledge and belief of the undersigned attorney, there are no related appeals or interferences.

Status of Claims

Claims 1-3 and 5-30 are pending and are each under final rejection. No other claims are pending. Each claim is appealed.

Status of Amendments

No amendment was submitted after the final rejection, dated 12/27/2005.

Summary of Claimed Subject Matter

Independent claims 1, 5, 13, 19, 22, and 28 are involved in this appeal.

Claim 1 claims a method for generating antialiased lines comprising the actions of: for each respective line (see lines 102, 104 of FIG. 1), determining which of a plurality of orientation classes that entire line falls into (p. 4, line 2; p. 6, lines 18-22); and performing subpixel sampling using one of a plurality of multi-point sampling patterns (see FIG. 1) (p. 6, line 23-p. 7, line 4) in dependence on which of said plurality of orientation classes that line falls into (see p. 4, lines 6-7).

Claim 5 refers to a method for antialiased rendering comprising the actions of: identifying, for at least one respective entire line, which one of a limited number of directions is most nearly parallel to the line (see p. 4, lines 3-4; see FIG. 1, 102, 104); and performing subpixel sampling on the line with a subpixel multi-point sampling pattern which has maximal resolution approximately normal to the one direction (see p. 6, lines 18-19; p. 6 line 23-p. 7, line 4).

Claim 13 claims a computer graphics system (see variously FIGs 1A-2) for generating antialiased lines comprising means for determining which of a plurality of orientation classes an entire line falls into (see, for example, p. 6, lines 13-16); and means for performing subpixel sampling using one of a plurality of multi-point sampling patterns (see FIG. 1 for sampling patterns) in dependence on which of said plurality of orientation classes that line falls into (see p. 6, line 13-p. 7, line 4).

Claim 19 claims a computer graphics system for generating antialiased lines, comprising: means for identifying, for at least one respective entire line, which one of a limited number of directions is most nearly parallel to the line (see p. 4, lines 3-4; see FIG. 1, 102, 104; see also page 6, lines 13-16); and means for performing subpixel sampling on the line with a subpixel multi-point sampling pattern (see FIG. 1 for sample patterns) which has maximal resolution approximately normal to the one direction (see p. 6, lines 18-19; p. 6 line 23-p. 7, line 4).

Claim 22 claims a method for generating antialiased lines comprising: for each respective line (see lines 102, 104 of FIG. 1), determining which of a plurality of orientation classes that entire line falls into (p. 4, line 2; p. 6, lines 18-22); and performing subpixel sampling using one of a plurality of multi-point sampling patterns (see FIG. 1) (p. 6, line 23-p. 7, line 4) in dependence on which of said plurality of orientation classes that line falls into (see p. 4, lines 6-7).

Claim 28 claims a method for generating antialiased lines, comprising the steps of: identifying, for at least one respective entire line, which one of a limited number of directions is most nearly parallel to the line (see p. 4, lines 3-4; see FIG. 1, 102, 104); and performing subpixel sampling on the line with a subpixel multi-

point sampling pattern which has maximal resolution approximately normal to the one direction (see p. 6, lines 18-19; p. 6 line 23-p. 7, line 4).

Dependent claim 3 is separately argued in this appeal. Claim 3 claims the method of claim 1, wherein the orientation classes (see FIG. 1 for lines of different orientation classes) correspond one-to-one to said sampling patterns (page 6, lines 18-21; page 6 line 23-page 7, line 4).

Grounds of Rejection to be Reviewed on Appeal

Whether claims 1-3 and 5-30 are unpatentable under 35 USC 102(e) as being anticipated by Nelson et al. (USPN 6,947,057).

Argument

I. Rejection of claims 1-3 and 5-30 as being anticipated by Nelson et al., USPN 6947057.

Examiner has rejected all pending claims under the same grounds, namely anticipation under 35 USC 102(e) by Nelson et al. Claims being argued separately are placed under a subheading identifying those claims by number, as follows.

A. Claim 1

Examiner has rejected all pending claims as being anticipated by Nelson et al, hereinafter referred to as Nelson. Claim 1 is reproduced for purposes of discussion:

> 1. A method for generating antialiased lines, comprising the actions of:
> for each respective line, determining which of a plurality of orientation classes that entire line falls into; and
> performing subpixel sampling using one of a plurality of multi-point sampling patterns, in dependence on which of said plurality of orientation classes that line falls into.

In rejecting claim 1, Examiner cites Nelson as teaching the claimed limitation of, "performing subpixel sampling using one of a plurality of multi-point sampling patterns, in dependence on which of said plurality of orientation classes that line falls into," by referring to Nelson at col. 28-29, lines 64-12, which states:

> Rendering unit 150A may compute a slope and intercept for each side of the line bounding box based on (a) the bounding box width d_{BB}, and (b) the slope m and intercept b of the line segment 2106. For an X-Major line segment, rendering unit 150A may determine the upper and lower box edges by the equations

> y=mx+(b+V)
> and
> y=mx+(b-V)
> respectively, where $V=(\frac{1}{2})d_{BB}$ *secant(θ), and where θ is the angle that the line segment forms with respect to the positive x axis. It is noted that the value secant(θ) may be stored in a lookup table addressed by slope m.

Applicants respectfully submit that this passage only teaches how to compute a slope and intercept for bounding boxes used in Nelson, and does not refer to selection of sampling patterns, and specifically does not refer to selection of sampling patterns in dependence on which orientation class the line falls into.

Therefore, Applicant respectfully submits that the above-referenced passage does not teach or suggest the claimed limitation of, "performing subpixel sampling using one of a plurality of multi-point sampling patterns, in dependence on which of said plurality of orientation classes that line falls into." If Applicant has overlooked a relevant teaching, it is respectfully requested that such teaching be pointed out with particularity.

To support Examiner's position, Examiner states in the office action, at page. 3, the following:

> Note, the Office interprets that the number and positioning of each perturbed sample is based upon the classification of the line, X or Y-major, since the number and positioning of the samples is directly based upon the bounding box made around the line segment, this bounding box, specifically its upper and lower edges, further computed by the m and b components of the line segment (see columns 28-29, lines 64-12).

Applicant respectfully disagrees with several points in Examiner's statement. For example, Examiner states that the number and position of the samples are based on the classification of the line as X- or Y- major. However, Applicant finds no such teaching in Nelson. To the contrary, Nelson specifically teaches (in the descriptions

of Figures 8-10 generally) that the sample patterns, whether perturbed or stochastic, are preferably generated at random. To wit:

> In the perturbed regular positioning scheme 192, sample positions are defined in terms of perturbations from a set of fixed positions on a regular grid or tiling. In one embodiment, the samples may be displaced from their corresponding fixed grid positions by random x and y offsets, or by random angles (ranging from 0 to 360 degrees) and random radii (ranging from zero to a maximum radius). [Col. 21, lines 4-10, emphasis added.]
>
> Stochastic sample positioning scheme 194 represents a third potential type of scheme for positioning samples. Stochastic sample positioning involves randomly distributing the samples across the 2-D viewport. Random positioning of samples may be accomplished through a number of different methods, e.g., using a random number generator such as an internal clock to generate pseudo-random numbers. Random numbers or positions may also be pre-calculated and stored in memory. [Col. 21, lines 19-27, emphasis added.]
>
> Turning now to FIG. 9, details of one embodiment of perturbed regular positioning scheme 192 are shown. In this embodiment, samples are randomly offset from a regular square grid by x- and y-offsets. [Col. 21, lines 28-31, emphasis added.]

These passages teach away from the claimed limitations in at least claim 1, as argued above. Specifically, these (and other) passages in Nelson teach that, though there are several types of sampling patterns (*i.e.*, regular positioning scheme, perturbed, or stochastic), none depend on an orientation class for the line being antialiased.

Applicant finds no teaching in Nelson that the sample pattern is "based on the classification of the line, X or Y-Major," as Examiner asserts. In support of this statement, Examiner provides only the citation to columns 28 and 29, lines 64-12, which are reproduced above and which do not appear to teach or suggest that sample

patterns are in any way based on line classification or orientation, as Examiner suggests. If Applicant has overlooked a relevant teaching, it is respectfully requested that such teaching be pointed out with particularity.

Examiner also states that, "the number and positioning of the samples is directly based upon the bounding box made around the line segment." Again, Applicant finds no such teaching in Nelson, neither at Examiner's cited passages nor elsewhere.

Nelson does use a bounding box, but Applicant respectfully submits that Examiner's statement that "the number and positioning of the samples is directly based upon the bounding box made around the line segment" is incorrect. As stated above, the number and positioning of the samples is based on one of the three schemes described in Nelson (*i.e.*, regular positioning, perturbed, or stochastic). The bounding box is used in Nelson to assign color and/or transparency values to the sample positions, based on their distance from the line, not to select the sampling pattern. According to the teaching of Nelson, the sample positions have already been determined before the bounding box is applied. For example, Nelson states at col. 29, lines 17-36 (in part):

> In step 530, rendering unit 150A may compute a set of sample positions for each of the candidate bins as suggested by FIG. 17C. For example, rendering unit 150A may read positional offsets dX and dY from sample position memory 354 and add the positional offsets to the coordinates of the corresponding bin origin (e.g., the lower-left corner of the bin). For various embodiments of the sample position computation, refer to the textual description above corresponding to FIGs. 8-10.
>
> ....
>
> In step 540, rendering unit 150A may assign color values (and/or transparency values) to the sample positions inside the line bounding box 2108 based on their normal distance from the line segment 2106.

Thus, Nelson teaches that the sample positions are first determined (as described in FIGs. 8-10) by one of three methods (*i.e.*, regular positioning, perturbed, or stochastic). Later, the rendering unit 150A reads those sample positions from sample position memory 354. The rendering unit then determines whether the sample positions are inside or outside the bounding box. If they are inside the bounding box, then color and/or transparency values are applied according to their distance from the line.

At no point in the teaching of Nelson is a sample's position dependent on the orientation class of the line. As shown above, the sample positions are determined before the line being antialiased is even identified. Those sample positions are stored in sample position memory 354, and read out whenever a line is being antialiased. Though Nelson does identify the slope of the line, the slope is only used to draw a bounding box, not to select a sample pattern or sample positions, **because the sample positions have already been determined by that point**, according to the teaching of Nelson.

Thus, Applicant respectfully submits that the limitations of independent claim 1 is neither taught nor suggested by the cited reference. Further, independent claims 5, 13, 19, 22, and 28 are rejected under the same reference and rationale. The rejections to these claims, and their respective dependent claims, are therefore believed addressed fully by the arguments made above in favor of claim 1. Further arguments in favor of individual claims follow.

B. Claim 5

Applicant also respectfully submits that the other independent claims of the present application are separately distinguishable from the cited reference. For example, claim 5 states:

> 5. A method for antialiased rendering, comprising the actions of:
> (a) identifying, for at least one respective entire line, which one of a limited number of directions is most nearly parallel to said line; and
> (b) performing subpixel sampling on said line with a subpixel multi-point sampling pattern which has maximal resolution approximately normal to said one direction.

In supporting the rejection of claim 5 (as well as claims 19 and 28), Examiner states:

> ...the Office interprets Nelson et al. to inherently calculate in which direction the line is most nearly parallel to when Nelson et al. discloses computing the slope (m component of the line segment equation) of the line. Also, since the samples used are found within the bounding box which is oriented in the same direction as the line segment, the Office interprets that these samples inherently provide maximal resolution approximately normal to the orientation of the line.

Applicant respectfully submits that, although Nelson teaches how to compute the slope of a line, this does not anticipate the claimed limitation of, "identifying...which one of a limited number of directions is most nearly parallel to said line," as shown in claim 5. Examiner has not cited teaching that "identifies" any "directions...most nearly parallel to said line." For example, the "limited number of directions" could be chosen from horizontal and vertical directions, and, depending on the orientation or slope of the line, either horizontal or vertical could be chosen, as taught in the present application. However, Nelson does not appear to go this far.

Merely identifying the slope of the line does not teach or suggest the claimed step of "identifying" a direction to which that line is most nearly parallel.

Further, Examiner has not cited teaching in Nelson which anticipates the claimed limitation of, "performing subpixel sampling on said line with a subpixel multi-point sampling pattern which has maximal resolution approximately normal to said one direction," as claimed in at least claim 5. If Applicant has overlooked a relevant teaching, it is respectfully requested that such teaching be pointed out with particularity.

Applicant respectfully submits that the examiner has misapplied the concept of "inherent" anticipation. Section 102 of Title 35 deals with novelty and loss of patent rights. An invention is said to be "anticipated" when it is squarely described or disclosed in a single reference as identified from one of the categories of 35 U.S.C. § 102, commonly referred to as "prior art". Express anticipation occurs when the invention is expressly disclosed in the prior art, patent or publication. In some cases, however, when the claimed invention is not described *in haec verba*, the "doctrine of inherency" is relied on to establish anticipation. Under the principles of inherency, a claim is anticipated if a structure in the prior art necessarily functions in accordance with the limitations of a process or method claim. *In re King*, 801 F.2d 1324, 231 U.S.P.Q. 136 (Fed. Cir. 1986). A prior art reference that discloses all of a patent's claim limitations anticipates that claim even though the reference does not expressly disclose the "inventive concept" or desirable property the patentee discovered. *Verdgaal Brothers, Inc. v. Union Oil Company of California*, 814 F.2d 628, 2 U.S.P.Q.2d 1051, (Fed. Cir. 1987). It suffices that the prior art process inherently possessed at that property. *Id.* Mere possibilities or even probabilities, however, are not enough to establish inherency. The missing claimed characteristics must be a "natural result" flowing from what is disclosed. *Continental Can Co. v. Monsant Co.*, 948 F.2d 1264, 20 U.S.P.Q.2d 1746 (Fed. Cir. 1991). Unstated elements in a

reference are inherent when they exist as a "matter of scientific fact". *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 7 U.S.P.Q.2d 1057 (Fed. Cir.), *cert. denied*, 488 U.S. 892 (1988) and *Hughes Aircraft Co. v. United States*, 8 U.S.P.Q.2d 1580 (Ct. Cl. 1988). Otherwise, the invention is not inherently anticipated.

In the present case, with respect at least to claim 5, there is no teaching in Nelson of identifying which of a limited number of directions is most nearly parallel to the line, nor of using a sampling pattern with a maximal resolution approximately normal to that direction. As shown above, Nelson generates sample patterns based on one of three methods (*i.e.*, regular positioning, perturbed, or stochastic). Nelson does not teach that a sample pattern is selected based on any line characteristics--slope or otherwise. Nelson instead teaches that the samples are generated, stored, and read out when the line is antialiased, and that the color or transparency of a given sample point depends on its distance from the line. Such teaching fails to teach or suggest the claimed limitations of at least claim 5.

Therefore, Applicant respectfully submits that all independent claims in the pending application are distinguished from the cited reference. Favorable reconsideration is respectfully requested.

Because of their dependence on allowable independent claims, all dependent claims are also believed allowable. Favorable reconsideration of all claims is therefore respectfully requested.

C. Claim 3

Further, several dependent claims are believed allowable on their own merit. For example, dependent claim 3 states:

> 3. The method of claim 1, wherein said orientation classes correspond one-to-one to said sampling patterns.

In rejecting claim 3, Examiner states at page 4 of the Office action:

> The Office interprets that the determination of X or Y-Major line corresponds one-to-one to the number and positioning of the samples found within the bounding box since the bounding box has a correspondence with the line segment in Nelson et al.

Examiner provides no citation to Nelson in support of this statement. Applicant respectfully submits that the bounding boxes are not the samples. For example, Nelson describes sample points at col. 3, lines 19-22:

> As used herein, the term "sample" refers to calculated color information that indicates the color, depth (z), and potentially other information, of a particular point on an object or image.

However, the "bounding box" described in Nelson is used to determine candidate bins:

> In step 217, rendering unit 150A may determine a subset of spatial bins which, based on their positional relation to the given triangle, may contribute samples that fall within the given triangle. The bins in this subset are referred to herein as candidate bins. In one embodiment, rendering unit 150A may determine the candidate bins by computing a minimal bin bounding box, i.e. a minimal rectangle of bins which efficiently contains the triangle bounding box, as suggested in FIG. 13C. For example, rendering unit 150A may first compute coordinates for a triangle bounding box by determining the maximum and minimum of the x and y coordinates of the triangle vertices. By rounding up and down the triangle bounding box coordinates, rendering unit 150 may determine coordinates for the minimal bin bounding box. In another embodiment, rendering unit 150A may use triangle vertex data to determine a more efficient (i.e. smaller) subset of candidate bins as shown in FIG. 13D. Rendering unit 150A may eliminate bins in the minimal bin bounding box which have no intersection with the triangle.

Therefore, Applicant respectfully submits that the Examiner has not made out a *prima facie* case against at least dependent claim 3.

Requested Relief

For the reasons advanced above, Appellant respectfully contends that claims 1-3 and 5-30 are patentable. Therefore, reversal of this rejection is respectfully requested.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection of this paper, including extension of time fees, to Deposit Account 07-2320 and please credit any excess fees to such deposit account.

Respectfully submitted,

Patrick C.R. Holmes
Registration No. 46,380
Attorney for Appellant

APPENDIX A – CLAIMS APPENDIX

THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Previously presented): A method for generating antialiased lines, comprising the actions of:

for each respective line, determining which of a plurality of orientation classes that entire line falls into; and

performing subpixel sampling using one of a plurality of multi-point sampling patterns, in dependence on which of said plurality of orientation classes that line falls into.

2. (original): The method of claim 1, wherein said classes consist of x-major and y-major.

3. (original): The method of claim 1, wherein said orientation classes correspond one-to-one to said sampling patterns.

4. (canceled)

5. (Previously presented) A method for antialiased rendering, comprising the actions of:

(a) identifying, for at least one respective entire line, which one of a limited number of directions is most nearly parallel to said line; and

(b) performing subpixel sampling on said line with a subpixel multi-point sampling pattern which has maximal resolution approximately normal to said one direction.

6. (original): The method of claim 5, wherein said number of directions is two.

7. (original): A graphics processor which is configured to implement the method of claim 1.

8. (original): A graphics processor which is configured to implement the method of claim 5.

9. (previously presented): The method of claim 2, wherein said classification of x-major and y-major depends on whether the x or y extent of the line is larger.

10. (previously presented): The method of claim 1, wherein said sampling patterns have the same number of sub-pixel sampling points.

11. (previously presented): The method of claim 1, wherein said sampling patterns have four sub-pixel sampling points.

12. (previously presented): The method of claim 5, wherein said sampling pattern has four sub-pixel sampling points.

13. (Previously presented) A computer graphics system for generating antialiased lines comprising:

means for determining which of a plurality of orientation classes an entire line falls into; and

means for performing subpixel sampling using one of a plurality of multi-point sampling patterns, in dependence on which of said plurality of orientation classes that line falls into.

14. (previously presented): The system of claim 13, wherein said classes consist of x-major and y-major.

15. (previously presented): The system of claim 14, wherein said classification of x-major and y-major depends on whether the x or y extent of the line is larger.

16. (previously presented): The system of claim 13, wherein said orientation classes correspond one-to-one to said sampling patterns.

17. (previously presented): The system of claim 13, wherein said sampling patterns have the same number of sub-pixel sampling points.

18. (previously presented): The system of claim 13, wherein said sampling patterns have four sub-pixel sampling points.

19. (Previously presented) A computer graphics system for generating antialiased lines comprising:

means for identifying, for all of at least one respective line, which one of a limited number of directions is most nearly parallel to said line; and

means for performing subpixel sampling on said line with a subpixel multi-point sampling pattern which has maximal resolution approximately normal to said one direction.

20. (previously presented): The system of claim 19, wherein said number of directions is two.

21. (previously presented): The system of claim 19, wherein said sampling pattern has four sub-pixel sampling points.

22. (Previously presented) A method for generating antialiased lines, comprising the steps of for each respective line:

determining which of a plurality of orientation classes that entire line falls into; and

performing subpixel sampling using one of a plurality of multi-point sampling patterns, in dependence on which of said plurality of orientation classes that line falls into.

23. (previously presented): The method of claim 22, wherein said classes consist of x-major and y-major.

24. (previously presented): The method of claim 23, wherein said classification of x-major and y-major depends on whether the x or y extent of the line is larger.

25. (previously presented): The method of claim 22, wherein said orientation classes correspond one-to-one to said sampling patterns.

26. (previously presented): The method of claim 22, wherein said sampling patterns have the same number of sub-pixel sampling points.

27. (previously presented): The method of claim 22, wherein said sampling patterns have four sub-pixel sampling points.

28. (Previously presented) A method for generating antialiased lines, comprising the steps of:

identifying, for at least one respective entire line, which one of a limited number of directions is most nearly parallel to said line; and

performing subpixel sampling on said line with a subpixel multi-point sampling pattern which has maximal resolution approximately normal to said one direction.

29. (previously presented): The method of claim 28, wherein said number of directions is two.

30. (previously presented): The method of claim 28, wherein said sampling pattern has four sub-pixel sampling points.

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APPENDIX B – EVIDENCE APPENDIX

Applicant hereby submits a copy of USPN 6,947,057 to Nelson et al., as first cited by Examiner in the Office action dated 12/27/2005.

APPENDIX C –RELATED PROCEEDINGS APPENDIX

None.

APPENDIX D –NOTICE OF APPEAL AS PREVIOUSLY FILED APPENDIX

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Mar 27 06 04:12p 972-980-5841 p.1

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FAX COVER SHEET

DATE: March 27, 2006 Total 3 Pages including This Cover Sheet
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FROM: Patrick C.R. Holmes

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Notice of Appeal In Response to Final Office Action dated December 27, 2005
US Application No. 10/086,986
Filing Date: March 1, 2002
"High Quality Antibased Lines with Dual Sampling Pattern"
Applicant: Gerard O'Driscoll
Examiner: Antonio A. Caschera
Art Unit: 2676

The Commissioner is hereby authorized to charge any fees necessary to Deposit Account 07-2320

Attorney: Robert O. Groover, Registration No. 30,039

Enclosures:
1. Notice of Appeal in duplicate (2 pgs), and
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DATE:	March 27, 2006
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By: _____
Sarah H. Lau

****Additional Notes:**

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Applicant: Gerard O'Driscoll
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Attorney: Robert O. Groover, Registration No. 30,059

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NOTICE OF APPEAL FROM THE EXAMINER TO THE BOARD OF PATENT APPEALS AND INTERFERENCES

Docket Number (Optional): TD-166

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Signature: [signature]

Typed or printed name: Sarah Lau

In re Application of: Gerard O'Driscoll

Application Number: 10/086,986

Filed: March 1, 2002

For: High Quality Antialiased Lines with Dual Sampling Pattern

Art Unit: 2676

Examiner: Antonio A. Caschera

Applicant hereby **appeals** to the Board of Patent Appeals and Interferences from the last decision of the examiner.

The fee for this Notice of Appeal is (37 CFR 41.20(b)(1)) $ 500.00

☐ Applicant claims small entity status. See 37 CFR 1.27. Therefore, the fee shown above is reduced by half, and the resulting fee is: $

☐ A check in the amount of the fee is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

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WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

I am the

☐ applicant/inventor.

☐ assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)

☑ attorney or agent of record. Registration number 30,059

☐ attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34.

[signature]
Signature

Robert O. Groover
Typed or printed name

972.980.5840
Telephone number

March 27, 2006
Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☑ *Total of 1 forms are submitted.

This collection of information is required by 37 CFR 41.31. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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